a U.S. EPA, 2002.
b TCEQ 2003a. In-house water quality chronic values derived for wastewater permits and requests from the Office of Waste based on LC50 values in accordance with methodology defined in the TSWQS. Water Quality Division.
c Texas Surface Water Quality Standards Chronic (unless otherwise noted) Criteria (30 TAC §307.6, Table 1, Effective August 17, 2000).
d Indicates that the criteria for a specific parameter are for the dissolved portion in water.
e Tier II Secondary Chronic Values from Suter and Tsao (1996).
f Criteria calculated using a hardness value of 50 mg/L. See formula for standard that follows.
g U.S. EPA Region 4. 2001. Value derived from Region 4 Water Quality Management Division screening worksheet.
h In designated oyster waters an acute saltwater copper criterion of 3.6 micrograms per liter applies outside of the mixing zone of permitted discharges, and specified mixing zones for copper will not encompass oyster reefs containing live oysters.
i Compliance will be determined using the analytical method for cyanide amenable to chlorination or by weak acid dissociable cyanide.
j Based on the procedure defined in TCEQ (2003), the percent dissolved silver that is in the free ionic form is estimated from the following regression equation: Y = exp [exp (1/ (0.6559 + 0.0044(Cl)))] where, Y = % of dissolved silver that is in free ionic form, and Cl = dissolved chloride concentration (mg/l). Persons should use the 50th percentile chloride value (from TCEQ, 2003) for the nearest downstream segment unless site-specific data is available.
k There is only an acute criterion (no chronic criterion). The indicated value is the acute criterion divided by 10.
l State of Colorado hardness-based water quality standard (Colorado Department of Public Health and Environment, 2005).
m Values calculated for OSWER 1996 as provided in Suter and Tsao (1996).
n Value calculated using Great Lakes Water Quality Initiative Tier I methodology (U.S. EPA,1993a) as provided in Suter and Tsao (1996).
o These numbers are FCVs calculated by the EPA for use in the derivation of the sediment quality criteria (U.S. EPA, 1993b, c).
p Criteria calculated using a pH of 6.0. See formula for standard that follows.
q Value derived by work group using the LC50 approach discussed in Section 3.5.1.1. Contact the TCEQ Technical Support Section (Remediation Division) for a full discussion of each value.
r According to U.S. EPA, 2002, bis(2-ethylhexyl)phthalate is not toxic to aquatic organisms at or below its solubility limit. Benchmark set at solubility limit given at TRRP Figure 30 TAC §350.73 (e)
w Indicates that the criterion is multiplied by a water-effects ratio in order to incorporate the effects of local water chemistry on toxicity. The water-effects ratio is equal to 1 except where sufficient data is available to establish a site-specific, water-effects ratio. Water-effects ratios for individual water bodies are listed in Appendix E of the TSWQS.
x USEPA, 2003, Region 5 Ecological Screening Levels (ESLs) for RCRA Appendix IX Hazardous Constituents (available at http://www.epa.gov/reg5rcra/ca/ESL.pdf)

A Effects Range Low (ERL) from: Long, E.R. and L.G. Morgan. 1990. The Potential for Biological Effects of Sediment-sorbed Contaminants Tested in the National Status and Trends Program. NOAA Technical Memorandum NOS OMA 52, March 1990.
B Lowest Effects Level (LEL) from: Persaud, D., R. Jaagumagi and A. Hayton. 1993. Guidelines for the Protection and Management of Aquatic Sediment Quality in Ontario. Water Resources Branch. Ontario Ministry of the Environment and Energy. August.
C No "c" footnotes.
D Threshold Effects Level (TEL) from: Smith, S.L., D.D. MacDonald, K.A. Keenleyside, and C.L. Gaudet. 1996b. The Development and Implementation of Canadian Sediment Quality Guidelines.In: Development and Progress in Sediment Quality Assessment: Rationale, Challenges, Techniques & Strategies. Ecovision World Monograph Series. Munawar & Dave (Eds.). Academic Publishing, Amsterdam, The Netherlands.
E When benchmarks represent the sum of individual compounds, isomers, or groups of congeners, and the chemical analysis indicates an undetected value, the proxy value specified at §350.51 (n) shall be used for calculating the sum of the respective compounds, isomers, or congeners. This assumes that the particular COC has not been eliminated in accordance with the criteria at §350.71 (k).
F The low molecular weight PAH benchmark is to be compared to the sum of the concentrations of the following compounds: naphthalene, acenaphthylene, acenaphthene, fluorene, phenanthrene, anthracene, and 2-methyl napthalene. The PAH benchmark is not the sum of the corresponding benchmarks listed for the individual compounds.
G The high molecular weight PAH benchmark is to be compared to the sum of the concentrations of the following compounds: fluoranthene, pyrene, benz(a)anthracene, chrysene, benzo(a)pyrene, and dibenzo [a,h]anthracene. The PAH benchmark is not the sum of the corresponding benchmarks listed for the individual compounds.
H Total PAH refers to the sum of the concentrations of each of low and high molecular weight PAHs listed above and any other PAH compounds that are not eliminated in accordance with §350.71 (k).
I The benchmarks for total PAHs are the most relevant in evaluating risk in an ERA as PAHs almost always occur as mixtures. Values for individual, low molecular weight, and high molecular weight PAHs are provided as guidelines to aid in the determination of disproportionate concentrations within the mixture that may be masked by the total. See discussion in Section 3.5.4.
J CCME (Canadian Council of Ministers of the Environment). 1999. Canadian environmental quality guidelines. Winnipeg, Manitoba.
K NYSDEC (New York State Department of Environmental Conservation). 1999. Technical guidance for screening contaminated sediments. Division of Fish , Wildlife, and Marine Resources. Albany, New York. 36 pp.
L Stortelder, P.B., M.A. Vandergaag, and L.A. van der Kooij. 1989. Perspectives for water organisms. An ecotoxicological basis for quality objectives for water and sediment. Part1. Results and calculations. DBW/RIZA Memorandum N. 89.016a. (English Version August, 1991). Institute for Inland Water Management and Waste Water Treatment. Lelystad, Netherlands.
M U.S. EPA. 1997. The incidence and severity of sediment contamination in surface waters of the United States. Volume 1: National sediment quality survey. EPA 823-R-97-006. Office of Science and Technology (4305). Washington, District of Columbia
N Benchmarks derived using formula in: Fuchsman, P.C. 2003. Modification of the Equilibrium Partitioning Approach for Volatile Organic Compounds in Sediment. Environ Toxicol Chem. 22:1532-1534. TCEQ Surface water values from Table 3-2 were used for water quality values. TRRP-24 default values of 1% fraction organic carbon (foc) and 0.37 porosity were used. The person should adjust these values if sufficient site-specific data indicate they are not representative.

S1 Efroymson, R.A., M.E. Will, and G.W. Suter. 1997. Toxicological Benchmarks for Contaminants of Potential Concern for Effects on Soil and Litter Invertebrates and Heterotrophic Process: 1997 Revision. Lockheed Martin Energy Systems, Inc. ES/ER/TM-126/R2
S2 Efroymson, R.A., M.E. Will, G.W. Suter, and A.C. Wooten. 1997. Toxicological Benchmarks for Screening Contaminants of Potential Concern for Effects on Terrestrial Plants: 1997 Revision. Lockheed Martin Energy Systems, Inc. ES/ER/TM-85/R3
S3 Texas-Specific Median Background Concentration (Figure 30 TAC §350.51(m)).
S4 Potential ecological risks associated with aluminum in soils is identified based on the measured soil pH. Where aluminum is a COC, it should only be retained for those soils with a soil pH less than 5.5. Source: U.S. Environmental Protection Agency. Ecological Soil Screening Level for Aluminum. Interim Final. OSWER Directive 9285.7-60. November 2003.
S5 U.S. EPA. Ecological Soil Screening Level for Antimony. Interim Final. OSWER Directive 9285.7-61. February 2005.
S6 Screening values for soil invertebrates.
S7 U.S. EPA. 2000. Ecological Soil Screening Level Guidance. Draft. Office of Emergency and Remedial Response. July 10, 2000.
S8 U.S. EPA. Ecological Soil Screening Levels for Barium. Interim Final. OSWER Directive 9285.7-63. February 2005.
S9 U.S. EPA. Ecological Soil Screening Levels for Beryllium. Interim Final. OSWER Directive 9285.7-64. February 2005.
S10 U.S. EPA. Ecological Soil Screening Levels for Cadmium. Interim Final. OSWER Directive 9285.7-65. March 2005.
S11 U.S. EPA. Ecological Soil Screening Levels for Cobalt. Interim Final. OSWER Directive 9285.7-67. March 2005.
S12 Iron is not expected to be toxic to plants in well-aerated soils between pH 5 and 8. Iron's relative importance is not so much based on its direct chemical toxicity, but its effect as a mediator in the geochemistry of other potentially toxic metals and the potential hazard of depositing flocculent. Source: U.S. Environmental Protection Agency. Ecological Soil Screening Level for Iron. Interim Final. OSWER Directive 9285.7-69. November 2003.
S13 U.S. EPA. Ecological Soil Screening Levels for Arsenic. Interim Final. OSWER Directive 9285.7-62. March 2005.
S14 U.S. EPA. Ecological Soil Screening Levels for Lead. Interim Final. OSWER Directive 9285.7- 70. March 2005.
S15 U.S. EPA. Ecological Soil Screening Levels for Pentachlorophenol. Interim Final. OSWER Directive 9285.7-58. March 2005.